

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Art Unit :
Examiner :
Serial No. : **Customer No. 26794**
Filed : Herewith
Inventors : Mark F. Kelcourse
Title : APPARATUS, METHODS AND
: ARTICLES OF MANUFACTURE Docket No.: 17988
: FOR A MULTI-BAND SWITCH
Dated: September 11, 2003

PETITION TO MAKE SPECIAL
UNDER 37 C.F.R. § 1.102(d)

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Applicant hereby petitions under 37 C.F.R. §1.102(d) and MPEP 708.02(VIII) that the subject application be accorded special status and advanced in order of examination.

The requirements of 37 C.F.R. §1.102(d) and MPEP 708.02(VIII) are fulfilled as follows:

1. A check for the appropriate fee (\$130.00) as set forth in 37 C.F.R. §1.17(h) is attached hereto.

2. The patent application as filed presents claims 1-19 drawn to a single invention.

In the event that restriction is required, an election will be made without traverse.

3. A pre-examination search was made. The classes and subclasses searched were 375/219, 130, 322, 374, 345, 281; 327/110, 113, 333, 355, 359, 423; 370/346; 438/57, 73; 455/134, 137 and 273. An Information Disclosure Statement (IDS) is filed concurrently herewith. The listed publications, copies enclosed, represent the results of the search.

4. A copy of each of the cited publications is enclosed for the record.

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5. A detailed discussion of the publications follows, pointing out, with particularity as set forth in 37 C.F.R. §1.111(b) and (c), that the claimed subject matter is patentable over the cited publications.

Applicants respectfully submit that all requirements called for by the applicable rules have been fulfilled. Applicants respectfully request early favorable action on this Petition.

DETAILED DESCRIPTION OF THE CITED ART

This detailed description of the related art is submitted as part of the Petition to Make Special pursuant to 37 C.F.R. §1.102 and MPEP 708.02. The following publications were uncovered during the pre-examination search and are discussed below:

No.	Patent No.	Inventor	Date Issued	Title
<i>U.S. Patents</i>				
1.	4,531,235	Brusen	07/23/1985	Diversity Signal Strength Indicator and Site Selection Apparatus for Using Same
2.	6,282,186	Wood, Jr.	08/28/2001	Method of Addressing Messages and Communications System
3.	6,292,047	Traylor	09/18/2001	Switching Down Conversion Mixer for Use in Multi-Stage Receiver Architectures
4.	6,324,211	Ovard et al.	11/27/2001	Interrogators Communication Systems Communication Methods and Methods of Processing a Communication Signal
5.	6,366,622	Brown et al.	04/02/2002	Apparatus and Method for Wireless Communications
6.	6,396,137	Klughart	05/28/2002	Integrated Voltage/Current/Power Regulator/Switch System and Method
7.	6,483,391	Magoon et al.	11/19/2002	System for Controlling the Amplitude of an Oscillator
8.	6,492,192	O'Toole et al.	12/10/2002	Method of Making a Schottky Diode in an Integrated Circuit
9.	6,492,897	Mowery, Jr.	12/10/2002	System for Coupling Wireless Signals to and From a Power Transmission Line Communication System

1. U.S. Patent No. 4,531,235 to Brusen

This patent discloses a diversity signal strength indicator for transmission site selection in a cellular-like mobile radio system producing an output strength indication signal which is proportional to the logarithm of the average strength of two diversity input signals. The two input diversity signals are time multiplexed together to form a composite signal, and a log amplifier/envelope detector then produces an intermediate log signal which is proportional to the logarithm of the envelope of the composite signal. The intermediate log signal is then operated on by a peak detector to produce a peak intermediate log signal which is then passed through a low pass filter to produce an output strength detection signal proportional to the average of the intermediate log signal and thus proportional to the logarithm of the average strength of the diversity input signal. The peak detector is preferably comprised of a capacitor charged through a diode for storing the peak levels of the intermediates log signal and a current source for draining the charge on the capacitor at a substantially uniform rate which is independent of the magnitude of the peak signal which is stored during time periods between peak signals. In another embodiment, the time multiplexed composite signal is first detected and then passed through a squaring circuit, a low pass filter and then a log amplifier to produce an output indicator circuit proportional to the logarithm of the average strength of the input diversity signals.

2. U.S. Patent No. 6,282,186 to Wood, Jr.

This patent discloses a method of establishing wireless communications between an interrogator and individual ones of multiple wireless identification devices, the method comprising utilizing a tree search method to attempt to identify individual ones of the multiple

wireless identification devices so as to be able to perform communications, without collision, between the interrogator and individual ones of the multiple wireless identification devices, a search tree being defined for the tree search method, the tree having multiple nodes respectively representing subgroups of the multiple wireless identification devices, wherein the interrogator transmits a command at a node, requesting that devices within the subgroup represented by the node respond, wherein the interrogator determines if a collision occurs in response to the command and, if not, repeats the command at the same node. An interrogator configured to transmit a command at a node, requesting that devices within the subgroup represented by the node respond, the interrogator further being configured to determine if a collision occurs in response to the command and, if not, to repeat the command at the same node.

3. U.S. Patent No. 6,292,047 to Traylor

This patent discloses a mixer circuit (400) for use with a multi-stage receiver (200) accepts a single ended or differential (i.e. balanced) input (401). A voltage to current converter (402) comprised of a single RF transistor coupled to the input (401) provides a single current node (404) having a current proportional to a received input. A switching network (408) employs a plurality of stages (406). Each stage (406) is connected to the current node (404) and further has a control line (A, B, C, D) of the switching network stage (406), generates clock signals having a frequency equal to the frequency of the received RF input signal. The switching network (408) under control of the clock signals switches the current at a frequency y equal to the frequency of the received RF input signal to generate baseband I and Q signals. If the mixer (500) is differential, the balanced signal inputs (520) will be 180° out of phase, one to another. In addition, the mixer (500) will consist of a first (510) and second (515) switching network. Of

importance, only one first (510) and one second (515) switching network stage is active at any instant in time.

4. U.S. Patent No. 6,324,211 to Ovard et al.

This patent discloses an invention including interrogators, communication systems, communication methods, and methods of processing a communication signal. One aspect of the present invention provides a backscatter system interrogator including a downconverter configured to receive a backscatter communication signal having a first frequency and convert the backscatter communication signal having the first frequency to a subcarrier signal having a second frequency less than the first frequency; a filter coupled with the downconverter and configured to filter direct path energy from the subcarrier signal; and a gain control coupled with the filter and configured to adjust the gain of the filtered subcarrier signal.

5. U.S. Patent No. 6,366,622 to Brown et al.

This patent discloses an apparatus for receiving signals including a low noise amplifier (LNA) configured to receive a radio frequency (RF) signal. An I/Q direct down converter is coupled to the LNA. The I/Q direct down converter is configured to split the RF signal into real and imaginary components directly to baseband signals. A local oscillator (LO) is coupled to the I/Q direct down converter and is configured to drive the I/Q direct down converter. First and second filters are coupled to the I/Q direct down converter. The first and second filters are configured to filter the down converted real and imaginary components, respectively. First and second analog-to-digital converters (ADCs) are coupled to the first and second filters, respectively. The first and second ADCs are configured to convert the real and imaginary

components into digital signals. The first and second ADCs have a dynamic range that is wide enough to convert the filtered, down converted real and imaginary components to digital signals without using variable gain on the filtered and down converted real and imaginary components. An apparatus for use in wireless communications includes a radio, a modem and a controller integrated onto a single integrated circuit (IC). The radio includes a receiver for receiving data and a transmitter for transmitting data. The modem is coupled to the radio and is configured to demodulate received data and modulate data for transmission. The controller is coupled to the modem and includes a digital interface for external communications through which received data and data for transmission is sent, a connection state machine configured to accept commands through the digital interface and to respond to the commands by initiating a sequence, and a receive/transmit state machine configured to perform state control of the radio in response to the initiated sequence.

6. U.S. Patent No. 6,396,137 to Klughart

This patent discloses an integrated voltage/current/power regulator/switch (VCPRS) system and method in which regulator/switch circuitry is vertically integrated on top of an existing integrated circuit. The present invention does not require additional integrated circuit chip area for the regulator pass device as is required in the prior art, and by virtue of its construction provides a significantly reduced on-resistance as compared to all prior art implementations. The present invention both stabilizes the power supply for large area integrated circuits and permits individual areas of the integrated circuit to have switched power capability, a highly desirable feature in low power and battery power applications. The present invention permits an increase in the power supply rejection ration (PSRR) for digital, analog, and

especially mixed-signal integrated circuit designs by permitting various circuit blocks to have localized power regulation that is obtained from a common power supply plane within the integrated circuit framework. Finally, the present invention appears to be the only economically practical method of addressing the power supply regulation requirements of modern and future integrated microprocessor designs.

7. U.S. Patent No. 6,483,391 to Magoon et al.

This patent discloses systems for controlling the amplitude of the output signal of a controllable oscillator in a frequency synthesizer are provided. One such system provides a circuit having a controllable oscillator and an amplitude control circuit. The controllable oscillator is configured to generate an output signal having a predefined frequency and a predefined amplitude. The controllable oscillator is also configured with a plurality of operational states that are controlled by the amplitude control circuit. Each operational state of the controllable oscillator defines a particular current bias associated with a distinct amplitude of the output signal of the controllable oscillator and determines the amplitude. When the amplitude of the output signal of the controllable oscillator is less than the predefined amplitude, the amplitude control circuit provides a control signal to the controllable oscillator. The control signal is configured to change the controllable oscillator to the operational state corresponding to the distinct amplitude that best approximates the predefined amplitude.

8. U.S. Patent No. 6,492,192 to O'Toole et al.

This patent discloses a method of forming an integrated circuit including a Schottky diode including providing a substrate of a first conductivity type, defining a region of a second

conductivity type relative to the substrate and forming an insulator over the second conductivity type region. The method also includes removing an area of the insulator for definition of a contact hole, and removing an area encircling the contact hole and forming highly doped regions of the second conductivity type in second conductivity type regions encircling the contact hole. The method further includes depositing a Schottky metal in the contact hole and annealing the metal to form a suicide interface to the second conductivity type region.

9. U.S. Patent No. 6,492,897 to Mowery, Jr.

This patent discloses a system for communicating information to and from untethered subscriber devices and tethered devices by the use of a power transmission line communication system interfacing to a conventional electric power distribution network. Untethered subscriber devices and tethered devices will be able to send and receive impulse or modulated signals. The coupling system to and from a power transmission line is a tethered device housed entirely in an enclosure able to replace a sunlight detector affixed to a street pole, or plug into an outlet, or to attach around a transmission line, or screw into a light socket. A battery supplies energy to the tethered device screwed into a light socket when no electricity flows to the socket. A tethered device attached around a transmission line is powered by magnetic induction and interfaces through a power transmission communication system. The tethered device interfaces directly to the electrical lines by means of a power transmission communication system. The tethered device is able to connect untethered subscriber device to a plurality of untethered devices and tethered devices to establish a personal, local, or wide area network. The tethered device is capable of locating other tethered devices and untethered subscriber devices, and using this positioning to adjust the signal power, and to handoff untethered subscriber devices.

DESCRIPTION OF THE INVENTION

The present invention relates generally to switched and more particularly to multi-band switches for wireless transmission and reception as fabricated on a single semiconductor chip.

ANALYSIS OF THE CITED ART

Claims 1, 7, 14 and 17 are representative of aspects of the invention. These claims are reproduced below for the Examiner's convenience.

**“1. A single-die integrated circuit for switching among a plurality of transmission ports and a plurality of receiver ports, comprising:
a transmitter switching section having a plurality of transmission ports, transmitter control circuitry operable to switch a selected one of the plurality of transmission ports to a transmission node; and
a receiver switching section having a plurality of receiver ports, receiver control circuitry operable to switch a selected one of the plurality of receiver ports to the transmission node.”**

**“7. A single-die multiband switch for wireless communication, comprising:
an antenna port;
a plurality of transmitter ports, for each transmitter port a switching topology operable to switch the last said transmitter port to the antenna port; and
a plurality of receiver ports, for each receiver port a switching topology operable to switch the last said receiver port to the antenna port.”**

**“14. A single-die transmitter/receiver integrated switching circuit, comprising:
a plurality of transmitter ports;
a plurality of receiver ports;
at least one antenna port;
a plurality of integrated circuit switching elements controllable to connect one of the transmitter ports or one of the receiver ports to the antenna port while isolating the remaining ones of the transmitter and receiver ports from the antenna port, at least one of the plurality of transmitter ports and the plurality of receiver ports being at least three in number, at least some of the integrated circuit switching elements arranged in cascaded fashion in order to reduce signal insertion loss.”**

“17. A method of switching one of a plurality of transmitters and a plurality of receivers to a transmitter/receiver antenna, comprising the steps of:

connecting each transmitter to a respective one of a plurality of transmitter ports formed on a single integrated circuit die;

connecting each receiver to a respective one of a plurality of receiver ports formed on the die;

controlling a selected one of a plurality of switching topologies each associated with a respective one of the transmitter and receiver ports to connect a respective selected one of the transmitter and receiver ports to an antenna port formed on the die; and

controlling other ones of the switching topologies to isolate others of the transmitter and receiver ports from the antenna port.”

U.S. Patent No. 4,531,235 to Brusen discloses a diversity signal strength indicator for transmission site selection in a cellular-like mobile radio system producing an output strength indication signal which is proportional to the logarithm of the average strength of two diversity input signals. The Brusen patent nowhere teaches or suggests the claimed switch comprising a single-die integrated circuit, on which is implemented a transmitter switching section having a plurality of transmission ports, and a receiver switching section having a plurality of receiver ports.

U.S. Patent No. 6,282,186 to Wood, Jr. discloses a method of establishing wireless communications between an interrogator and individual ones of multiple wireless identification devices, the method comprising utilizing a tree search method to attempt to identify individual ones of the multiple wireless identification devices so as to be able to perform communications, without collision, between the interrogator and individual ones of the multiple wireless identification devices, a search tree being defined for the tree search method, the tree having multiple nodes respectively representing subgroups of the multiple wireless identification devices, wherein the interrogator transmits a command at a node, requesting that devices within the subgroup represented by the node respond, wherein the interrogator determines if a collision

occurs in response to the command and, if not, repeats the command at the same node. The Wood patent nowhere teaches or suggests the claimed switch comprising a single-die integrated circuit, on which is implemented a transmitter switching section having a plurality of receiver ports.

U.S. Patent No. 6,292,047 to Traylor discloses a mixer circuit (400) for use with a multi-stage receiver (200) accepts a single ended or differential (i.e. balanced) input (401). The Traylor patent nowhere teaches or suggests the claimed switch comprising a single-die integrated circuit, on which is implemented a transmitter switching section having a plurality of transmission ports, and a receiver switching section having a plurality of transmission ports, and a receiver switching section having a plurality of receiver ports.

U.S. Patent No. 6,324,211 to Ovard et al. discloses an invention including interrogators, communication systems, communication methods, and methods of processing a communication signal. The Ovard patent nowhere teaches or suggests the claimed switch comprising a single-die integrated circuit, on which is implemented a transmitter switching section having a plurality of receiver ports.

U.S. Patent No. 6,366,622 to Brown et al. discloses an apparatus for receiving signals including a low noise amplifier (LNA) configured to receive a radio frequency (RF) signal. The Brown patent nowhere teaches or suggests the claimed switch comprising a single-die integrated circuit, on which is implemented a transmitter switching section having a plurality of receiver ports.

U.S. Patent No. 6,396,137 to Klughart discloses an integrated voltage/current/power regulator/switch (VCPRS) system and method in which regulator/switch circuitry is vertically integrated on top of an existing integrated circuit. The Klughart patent nowhere teaches or

suggests the claimed switch comprising a single-die integrated circuit, on which is implemented a transmitter switching section having a plurality of transmission ports, and a receiver switching section having a plurality of receiver ports.

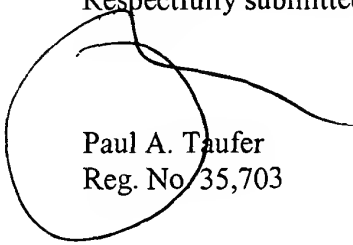
U.S. Patent No. 6,483,391 to Magoon et al. discloses systems for controlling the amplitude of the output signal of a controllable oscillator in a frequency synthesizer. The Magoon patent nowhere teaches or suggests the claimed switch comprising a single-die integrated circuit, on which is implemented a transmitter switching section having a plurality of receiver ports.

U.S. Patent No. 6,492,192 to O'Toole et al. discloses a method of forming an integrated circuit including a Schottky diode including providing a substrate of a first conductivity type, defining a region of a second conductivity type relative to the substrate and forming an insulator over the second conductivity type region. The O'Toole patent nowhere teaches or suggests the claimed switch comprising a single-die integrated circuit, on which is implemented a transmitter switching section having a plurality of transmission ports, and a receiver switching section having a plurality of transmission ports, and a receiver switching section having a plurality of receiver ports.

U.S. Patent No. 6,492,897 to Mowery, Jr. discloses a system for communicating information to and from untethered subscriber devices and tethered devices by the use of a power transmission line communication system interfacing to a conventional electric power distribution network. The Mowery, Jr. patent nowhere teaches or suggests the claimed switch comprising a single-die integrated circuit, on which is implemented a transmitter switching section having a plurality of receiver ports.

Accordingly, Applicants respectfully request that Petition to Make Special be granted, and that the application be taken out of turn for examination. Applicants also respectfully request an early consideration and allowance of the solicited claims.

Respectfully submitted,



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PAT:ers
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